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WOMEN AND COMPUTERS :

CURRENT SITUATION

AND PROSPECTS FOR FUTURE ACTION

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WOMEN AND COMPUTERS :

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AND PROSPECTS FOR FUTURE ACTION

By
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This report, is one of a series of research papers that are result of work done by or for the Organizational Research Directorate, Canadian Workplace Automation Research Centre, Department of Communications, Government of Canada. The views expressed in this report are those of the author.

*The complete report is available in French.
*La version intégrale du rapport est disponible en français.

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FOREWORD

Presented here are the findings of a study, commissioned by CWARC, to identify lines of research on the issue of women and workplace automation.

The study was undertaken because of the far-reaching impact of new information technology, especially office automation, on the employment and work of women. Indeed, it is widely recognized that workplace automation has had its most significant impacts on jobs in which women are concentrated.

The study's first objective was to construct an inventory of research on women and workplace automation conducted in Canada between 1980 an 1985. Its second objective was to identify sources of Canadian expertise on this problem. The inclusion of the concerns of women's group provides complementary information.

The bibliographical survey showed a significant increase in research on workplace automation after 1983, while the inventory of researchers and institutions demonstrated that a great deal of work has been done on various aspects of computerization. However, analysis reveals that little work has been done specifically on women. This is surprising in view of the broad impact on this group.

From the diversity of viewpoints expressed, the author was able to identify a variety of research on work impacts (unemployment, career and geographic mobility, sectoral and regional impacts, working conditions, etc) as well as training and retraining issues (career guidance, on-the-job retraining, etc). A need for information and awareness campaigns was observed.

The author also points out a need to support and document the impacts of new technology on women through the creation and regular updating of data banks (section 3).

In section 4, the author identifies the need to obtain hard facts on the implementation process through detailed case studies and longitudinal quantitative analysis of change, for women in general and for certain subpopulations. The positive aspects of computerization and the problems associated with the implementation process should also merit particular attention. Also needed is the development of a conceptual framework and a specific approach to women and new technology, so that the complexity of problem analysis may be fully grasped.

Bearing in mind the wide range of concerns raised by this study, the CWARC will soon start its research program on women and workplace automation.

Lucie Deschênes
Senior Analyst

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INTRODUCTION

For a number of years now, the question of computer technology and its impact has provided ample food for thought and forced us to act quickly to develop our concept of what the society of tomorrow will be like and, as a corollary, what it should be like. Our libraries contain shelves full of the widest variety of scenarios and forecasts, but in spite of the variety of viewpoints adopted, one constant appears systematically in these studies: women, due in particular to their concentration in clerical jobs, will be the first and the most severely affected by this reorganization of work space, types, contents and overall structure.

The threat of massive, structural unemployment of female workers looms before us, since jobs in general are becoming increasingly specialized, and those held by women downgraded and rendered less secure. All of these questions, and many others, are a constant reminder to us of the urgency not only of assessing the nature and extent of the impact on women - and proposing remedies where possible - but also, and above all, of developing effective programs and action, in line with the principles of equal opportunity designed to ensure that women are not left behind by the revolution in technology.

Many researchers and institutions have placed on their agendas this important question of the impact of computer technology on women. We must, nevertheless, recognize how little we actually know about this subject and how little coordination of efforts currently exists. We must determine what the research needs are, as well as the needs of researchers already working in the field. We must also determine whether there are any major gaps in our knowledge or action and, at the same time, if there is any duplication of efforts.

These general questions have guided the preparation of this study. Since CWARC wishes to develop mechanisms for research and cooperation on the question of women and new technology, the first step will be to identify and assess both the needs and the resources available in Canada. This was our goal with this study, although the scope of this work was more limited. The work done over the past four months was basically the first step. We examined the question of women and computer technology in order to prepare 1) a bibliography of documentation published in Canada since 1980, 2) a brief list of the researchers working on this question in Canada and the resources that are allocated by certain institutions, and 3) a list of research needs as expressed by certain researchers already working in the field. Thus, on the one hand, we collected documentary information and, on the other hand, conducted semi-directed interviews with women recognized for their work in this area.

The first part of this report contains a description of the work carried out, the second part, an analysis of the information collected in our literature review and during the interviews.

It is our sincere wish that this work contribute, however modestly, to our understanding of what is at stake and to the development of relevant strategies to give women an equal share in the profits that may result from the "computerization of our society".

PART I - THE STATUS OF RESEARCH

I. WORK ACCOMPLISHED

1.1 Restatement of objectives

The CWARC project lasted four months, from June to October 1985.

The objective was to determine the status of research on the problem of women and computer technology in Canada. At this stage, we were seeking to identify both areas of expertise and research needs, and to determine areas of possible cooperation with CWARC in this respect.

By "the problem of women and computer technology", we mean all questions dealing with:

1) computerization of work in the service sector (large private companies, crown corporations and small businesses);

2) innovation by women with respect to computer technology (creation of businesses, development of new forms of work, etc.);

3) computerization in unions, associations and special interest groups;

4) protection of privacy.

We have excluded from our target field all aspects of the private use of computers, computerization of leisure and cultural activities, CAD/CAM and robotics.

Specific objectives

More specifically, at this stage of the project we wanted to:

1) make an inventory of research carried out in Canada between 1980 and 1985;

2) identify experts in this field and collect information on their current and future projects;

3) determine the needs of the field with respect to research and production of tools;

4) promote the circulation of information between CWARC and the various experts, and within the expert group;

5) draw up recommendations for CWARC with respect to possibilities for cooperation and/or projects to be developed.

There were three main aspects to this work: documentary research, inventory of research and the institutional and human resources currently involved in research and the production of tools, and encounters with experts and users.

1.2 The inventory

1.2.1 Documentary research

Our goal was to draw up as complete a bibliography as possible of the documents published in Canada since 1980. We collected lists of publications from the main government departments and bodies involved in such research (Department of Labour, Women's Bureau, CACSW, CSF, Employment and Immigration, Economic Council of Canada, Ministry of State for Science and Technology, GAMMA, Institute for Research on Public Policy, INP, etc.). We also examined bibliographies already prepared by certain specialized groups (CSF, Labour Canada, etc.).

The Canadian Periodical Index and various bibliographies of major documents published to date on the subject were also studied (CACSW, Menzies, Benoit et al., etc.).

A computer search did not appear relevant and, in fact, several librarians advised against it. The data banks that might have been searched contained mainly American titles, while we were interested in examining the Canadian reality.

This bibliography is appended to the present report.

1.2.2 Inventory of research and researchers

Our goal was to draw up a list of Canadian researchers dealing with these questions and to make an inventory of current and completed research to date, with regard to preparing the inventory of researchers. This work was carried out, in part, using lists of contacts drawn up by Michèle Guay and the author of this report, lists of participants in colloquia and conferences on new technologies ("The Future is Now" - 1982; The "New technologies; strategies" a conference organized by the QTF - 1985; the conference on micro-electronics and the workplace; Commissions 2 and 3 of the Quebec socioeconomic conferences - 1985; a conference sponsored by the Canada Science Council in the winter of 1984 and organized by Socioscope, etc.).

An inventory of Canadian research on office automation was prepared by Dr. Roger Kaye for the federal Department of Communications in 1982. We selected several names from that document as well as from among the authors listed in the bibliography.

We also consulted the preliminary inventory of research on computerization in Quebec, prepared by members of Commission 3 (micro-electronics) of the socioeconomic conferences organized by the Quebec Department of Science and Technology last spring. In addition, we obtained additional names from the women interviewed.

As a last step, we requested a search of the Canadian Register of Research and Researchers in the Social Sciences, a listing of 8,500 researchers, 6,000 research projects and over 30,000 publications. This request yielded a fairly exhaustive list of

research undertaken in Canada as of August 1985 (a total of about 100 references).

The list collected could not be computerized, due to lack of time, but may be consulted at the Organizational Research section of CWARC.

1.2.3 The inventories: comments and reservations

This rapid overview of the field led us to draw several preliminary conclusions:

1) On the whole, one of the difficulties of a project such as ours is to define the particular field (research on women and computer technology). We realized that research on women and computerization, while more specific, is nevertheless closely linked to the more general problem of the computerization of work.

   In fact, others have clearly demonstrated that jobs held mainly by women are the first and most severely affected by automation of work. Consequently, any examination of work automation in general (whether in offices, banks, or businesses), necessarily provides information on the impact of automation on women. It thus appears that research on women in this respect is more a question of perspective (differential analysis of impacts, for example) than a question of object.

   For this inventory, we nevertheless felt it advisable to first collect information on all projects described as dealing with the human and organizational aspects of work transformation. We must now develop an analysis model

that will allow us to better define the specific field of research on women in which we are interested.

2) Looking at the bibliographical aspect, our initial examination showed that research on computerization has risen sharply since 1983; since that time, there has been an astounding increase in the number of works published.

At the outset, it appears that many of the documents published are based mainly on second-hand data. A first glance, indicate that the majority of them seem to be summaries, accounts of meetings and mass-market documents. Notable exceptions are the research by Heather Menzies and Benoit et al., both of which are based on case studies, and Peitchinis' analyses, based on economic forecasts.

3) The inventory of researchers or institutions currently carrying out research also revealed massive growth. As Roger Kaye remarked in 1982, with respect to office automation, research is being carried out on one aspect of this question or another in at least two Canadian universities. Today, we can add that most labour organizations and a number of federal and provincial government departments are also conducting research in this field. Certain departments, such as Communications, even have a number of programs going on at different levels or in different branches (Office Automation Program, CWARC, for example).

In addition, over the last decade, a number of research centres specializing in various aspects of automation have been established, and this theme is receiving special attention in a number of centres or institutions that subsidize and cooperate with researchers. In short, there seems to be a very high level of expertise and

institutional resources, since we were able to identify more than a hundred researchers and institutions at this preliminary stage.

It is clear that making an inventory of all these programs, their objectives and accomplishments, would be a colossal task extending far beyond the framework of this project. The work carried out here should therefore be considered a first sweep, and the resource bank read as an indication of potential interest that might emerge and be mobilized in specific information exchanges or research projects.

Moreover, the list we have compiled should be updated. In this exploratory study, we chose not to contact all of the individuals and institutions identified in order to verify the accuracy of the information (some of which dates back several years). This work would only have been worthwhile insofar as we could be sure that the list would then be updated regularly.

For example, we selected the names of some researchers working on the question of the effects of new technology on work. It remains to be seen whether these researchers are actually examining the work of women, or whether they are examining questions of productivity, space, supervisory work, etc. In the same way, it would have to be determined whether researchers working on the question of women and education are looking, for instance, at technical training. These questions call for additional data collection.

It may be seen, then, that this undertaking calls for a considerable amount of work. Nevertheless, we believe that there are many reasons in favour of doing this work, and we will come back to these in the section on recommendations.

1.3 Interviews

The second phase of data collection involved selecting potential resource persons and conducting about a dozen interviews that would allow us to identify the real needs of researchers, their resources, and avenues of cooperation that might involve CWARC.

Together with Michèle Guay, we developed the following general criteria for selecting our interview candidates:

- Concentrate on the Montreal region and extend out in concentric circles with very good coverage of Montreal and thinner coverage, if necessary, of Quebec City and Ottawa.

- Concentrate on organizers at the grass-roots level, women using micro-computers in their work environments, their unions or professional organizations. Next, select several individuals and/or institutions working in research.

- Target persons (and/or organizations) known to be working specifically on the problem of women and the automation of work or of their associative life.

It may be seen that special emphasis was placed on an inventory of needs rather than on expertise.

As mentioned in the previous section, the field of expertise is fairly large and has already been inventoried by various bodies (INP, Canadian Registry of Research, CRIAW). Less is known, however, about the needs identified by users and their organizations, as well as by other persons working in this area. We felt that this represented a significant gap in current knowledge.

Moreover, it appeared at first glance that very few organizations or researchers have looked at the whole question of the computerization of associative life, despite the fact that the desire to "get control over technology" is expressed time and again by women's groups. This is the second major gap we identified with respect to research. One method we used to complement the information already available was to examine this question with various groups having "technology" committees (such as the FFQ and CRIAW, for example). We placed less emphasis on unions, since CWARC is currently conducting another project to inventory needs in this sector.

In accordance with these broad guidelines, we made an initial selection from the list of contacts compiled in Phase I, and retained the names shown in Table 1.

TABLE 1

LIST OF SELECTED RESOURCE PERSONS

TYPE		NAME	LOCATION	INTERESTS
Users and groups of users	*	-Regr. des femmes entrepreneures du Québec (association of businesswomen)	Montreal	Innovative businesswomen
	*	-Regr. des secrétaires du Québec (association of secretaries)	Montreal	Female clerical workers
		-Professional Secretaries International (Quebec chapters)	Montreal or Quebec City	Female clerical workers
Field workers	**	-YWCA - Management Centre for Women, Ruth Selwyn	Montreal	Demystification - Awareness models, organization of conferences, courses, workshops
		-Au bas de l'échelle ("Rank and file")	Montreal	Defending rights and doing studies on non-unionized women workers
	*	-TNT Inc. (non-traditional work), Nicole Yergeau	Montreal	Integration of women into non-traditional occupations
	**	-Montreal Women's Centre, Mona Forest	Montreal	Women returning to the labour force. Computerization requirements for administrative procedures
	*	-CIAFT (action committee on job opportunities for women), Lise Leduc	Montreal	"Technology" committees; briefs to various parliamentary commissions parliamentary commissions and organization of regional round tables to identify client needs
Women's groups	**	-FFQ (Quebec Federation of Women) - Denyse Rochon	Montreal	
	*	-CRIAW, Yolande Mennie	Canada-Wide Ottawa	Bringing together researchers; organizing conferences; feasibility studies on computerization of data on women

TABLE 1 (cont'd.)

LIST OF SELECTED RESOURCE PERSONS

TYPE		NAME	LOCATION	INTERESTS
Women's groups	**	-Relais-Femmes, Montreal, Marie Letellier	Montreal	Liaison between women's groups and university researchers. Production of documents on women and computers
	*	-Canadian Congress for Learning Opportunities for Women, Susan McCraw Van der Voet	Canada-Wide (Montreal of Ottawa)	Canada-Wide group; conferences
		-National Action Committee on the Status of Women (NAC)	Canada-Wide (Ottawa)	Canada-Wide group; conferences
Unions	**	-CNTU, Danielle Hébert, responsible for status of women	Montreal	
		-Public Service Alliance, Janice Manchee	Ottawa	Author and researcher
		-Canada Labour Congress, Susan Attenborough	Ottawa	
		- Cdn. Federation of Communications Workers, Patricia Blackstaff	Ottawa	
Researchers	**	-HEC, Jeannine McNeil and Dina Lavoie	Montreal	Research on women
	*	-University of Montreal, Instructor's certificate in office automation, Lauraine Gratton or Jacqueline Bourdeau	Montreal	Development and in charge of certificate program
	**	-Céline St-Pierre, Dept. of Sociology, UQAM	Montreal	Research on computerization and commission member
		-Lorna R. Marsden, Dept. of Sociology, University of Toronto	Toronto	Research on small business; Labour Canada Committee on "research and case studies"; member of senate
		-Patricia McDermott, Dept. of Sociology, York University	Toronto	Research; service and retail sales sectors; participation in many groups

TABLE 1 (cont'd.)

LIST OF SELECTED RESOURCE PERSONS

TYPE		NAME	LOCATION	INTERESTS
Centres and institutions carrying out research	**	-IRAT (Institute for applied research on work), Colette Bernier	Montreal	Current studies on banks and teaching
	*	-INP (Quebec national institute for productivity)	Montreal	Inventory of research in Quebec
		-GAMMA, Iris Fitzpatrick Martin	Montreal	Author of Women and Informediation
		-CLSC Centre-ville, Suzanne Bélanger	Montreal	Research on occupational health and safety
	**	-Socioscope, Fernande Faulkner (now with the federal Department of communications' Office 'utomation rogram)	Ottawa	A number of research projects on implementation; organization of conferences
Provincial Departments and advisory bodies	*	-Quebec Council on the Status of Women, Micheline Boivin	Quebec City	Research director
	**	-Quebec Council on the Status of Women, Consult-Action, Louise Fortin	Montreal	Organizer providing support to women participating in socioeconomic conferences
		-Centre for labour market research and statistics Quebec Department of Manpower and Income Security, Carmelle Benoit	Montreal	On-going research
	**	-Quebec Department of Higher Education, Science and Technology, Lise Lacroix	Quebec City	Research for computerization in groups
	*	-Quebec Department of Manpower and Income Security, Renée Carpentier and Monique Frappier-Desrochers,	Montreal	Surveys and research on impacts on work and on the economy

TABLE 1 (cont'd.)

LIST OF SELECTED RESOURCE PERSONS

TYPE	NAME	LOCATION	INTERESTS
Federal Departments and advisory bodies	* -Economic Council of Canada, Cécile Dumas	Ottawa	Major research for Council on women's issues
	** -Labour Canada, Women's Bureau, Jane Gaskey and Gwenn Hughes	Ottawa	
	** -Labour Canada, Technology Impact Research Fund, Sue Kirby	Ottawa	
	-Status of Women Canada, Maureen O'Neil (?)	Ottawa	
	** -CACSW, Jennifer Stodard, Mary Lee Stephenson or Lorraine Garneau	Ottawa	

* Individual or organization contacted by telephone.

** Individual interviewed in person.

We finally contacted twenty-five of these people and conducted twelve interviews (some interviews were held with several people at a time, for a total of fifteen respondents in all).

The following section provides a description of the past, present and planned activities of these groups or institutions as presented to us by the respondents.

II. DESCRIPTION OF EXISTING PROJECTS

Montreal Women's Centre * -Mona Forest, Director:

The Women's Centre has been actively interested in four different aspects of computer technology over the past few years.

The first aspect has to do with the computerization of its own administrative functions. The Centre has a reference and information centre that is now handling almost 50,000 requests a year. The Centre has to maintain a list of associations and services (3,500 references in all), that it must be able to consult rapidly. A card file is also kept with basic information on each person making a request. This information may be used to analyze which types of information are the most important, who requests what and who needs what (by age, number of dependent children, marital status, education level, etc.), thus making it possible to plan courses, information programs, etc. for these specific groups. The Centre's needs with respect to computerizing these administrative functions were evaluated over a two-year period by two teams of students from the master's program in Computer Science at McGill University.

The second aspect deals with the "Option'elle" guidance service which the Centre offers to the most underprivileged group of women in the labour force (immigrants and/or the poorly educated and/or the elderly). The Centre sees more than 1,000 women a year in connection with this service. It has identified a need for introduction/familiarization on micro-computers for these women, in order to direct them into higher-paying jobs. These women often need work quickly, and this is one of the reasons

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* Additional information may be consulted at CWARC.

why, with waiting lists several years long, government services are no longer adequate.

The Centre has been studying the possibility of developing its own course. During the past year, a researcher has analyzed the needs and capabilities of women and the content and accessibility of existing courses. She also studied the needs of employers, conducting interviews to determine real employment opportunities. An 8 to 10 week course was then developed and tested, and the Centre would like to offer this course next year, provided it can obtain the necessary equipment.

Thirdly, the Centre presented a brief on the Maison des Sciences et Technologies de Montréal, as a resource group on the specific needs of girls and the elimination of sexism in the field. The Centre is currently a member of the Maison's program committee.

The fourth and last aspect concerns an after-school program the Centre offers to girls from underprivileged families in the neighborhood, aimed at broadening their horizons and preventing school drop-outs. The Centre would like to include a technological element in the program in the coming year.

Canadian Congress for Learning Opportunities for Women (CCLOW) - Congrès canadien pour la promotion des études chez la femme (CCPEF) - Suzan McCrae Van der Voet, Director:

The CCLOW is constantly working on women's issues. It maintains a bank of resource persons interested in the question of technical training and technology, and deals with this issue in all the briefs it presents to various commissions.
In addition, the members of CCLOW feel there is a large need for the development of information kits for women as well as specific educational tools for women, particularly at the adult

education level. CCLOW would be interested in working on such projects. Its members (women throughout Canada who specialize in education) have already submitted a project to the Department of Communications for funds to prepare an information kit on Telidon for a female public. The department refused this grant request.

Members of CCLOW would also like to cooperate in the preparation of remote education programs for women, as well as group training programs.

Canadian Advisory Committee on the Status of Women (CACSW) - Lorraine Garneau, Researcher:

After producing several briefs for various commissions and publishing a number of documents on the question of women and technology (see the bibliography), the CACSW, according to Lorraine Garneau, is not working on this issue at the present time.

CIAFT (Action council on job opportunities for women) - Lise Leduc, Coordinator:

CIAFT is a group of women currently or formerly involved in the network of programs, projects or groups working for greater access by women to the labour market. This is a provincial group.

CIAFT and the FFQ were the two women's groups invited to participate in the conferences on micro-electronics organized by the Quebec Department of Science and Technology. Since these conferences ended, in the spring of 1985, their "new technologies" committee has been inactive.

CIAFT, which brings together associations working directly with women joining the labour force in all parts of Quebec, has also distributed information on these conferences and the positions it took to these groups. CIAFT has also attempted to set up regional round tables on new technologies within the network of groups working on the question of women who return to work. Although these round tables are still in existence, the women involved feel that they have many other problems to tackle before that of new technologies, and this is no longer a goal.

Quebec Council on the Status of Women (CSF) - Micheline Boivin, Research Director, and Louise Fortin, Organizer:

The CSF's interest in this issue led to the preparation, by Renée Carpentier, of a summary of the information available on women and computer technology, in 1983 (see bibliography). The research department dealt with this question only recently when, in October 1985, it hired a researcher to prepare a status report on the question. Based on this document, the department will be able to determine what further action should be taken on this issue.

Louise Fortin, an organizer with the Consult-Action service responsible for work-related issues, provided technical support to the two women's groups (FFQ and CIAFT) invited by Pauline Marois to participate in the conferences on micro-electronics organized by the Quebec Department of Science and Technology. Louise Fortin has not worked in this field since the conferences ended in the spring of 1985. The two groups have, however, planned an assessment meeting for the fall, at which time a decision will be made regarding further action on the issue.

Louise Fortin also participated in a mission to France and Sweden to study the question of women and computer technology

(role of women's groups, union demands, impacts observed, etc.). She and Renée Carpentier, who was also along on the mission, are preparing a hundred-page internal report that will be available on request.

Economic Council of Canada* -Cecile Dumas, Researcher:

The ECC recently initiated a major research project, with the final report expected for the summer of 1987. This consensus document will deal with the impact of technological change on the labour market. The group is to carry out a survey of 5,000 Canadian businesses with 30 or more employees, covering the past 5 years. Case studies are also planned in large corporations and the federal government. This research is being carried out as a Council project, as opposed to being research that is merely sponsored by it; this means that it is endorsed by 25 members of the ECC and will influence the development of policies, etc.

One whole section of this project deals with women's work, and this is a variable that will be integrated into the survey. In addition, Cécile Dumas, who is responsible for this section, is currently completing a review of the literature available as well as an inventory of courses and training programs offered in various government departments. One element to be studied is the rate at which women move from one occupation to another.

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* Additional documentation may be consulted at CWARC.

CNTU* - Danielle Hébert, Head, Women's Status; Michel Doré, Research Department:

After a year of research, the CNTU published a mass-audience document intitled "Les puces qui piquent nos jobs" in 1982, followed by "A nous le progrès". The Women's Status Committee also published, in the 4th and 5th reports of the CNTU Women's Status Committee (1983 and 1984), positions and demands regarding women and new technology.

In addition to these activities, the Committee regularly organizes training/awareness sessions for its members on the phenomenon of technological change. The sessions are primarily aimed at developing a better understanding of the changes and issues involved. These 2 or 3-day sessions have already been given in the insurance sector, in credit unions, school boards, CEGEPS and hospitals.

This fall, the Research Department will begin a 15-month research project on technological change. The question of women will be touched upon, particularly in the part of the study dealing with the health sector. This research project will not, however, deal with office work, since the sponsoring body decided that enough research had already been carried out in this area for the time being.

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* Additional documentation may be consulted at CWARC.

Socioscope - Fernande Faulkner, Consultant, currently employed by the federal Department of Communications - Office Automation Program:

Fernande Faulkner was responsible for the evaluation of pilot projects and the implementation of information systems (office automation, semi-automatic translation system) with the Public Service Commission, specifically in the departments of Energy, Mines and Resources and Indian Affairs. As part of this research, certain questions were asked about women and automation, but the main concentration was on five variables: technology, performance, attitudes, human and social impact, organizational impact.

She also studied the installation of Telidon in certain Quebec households, where she looked at differences in usage between men and women. on behalf of the Science Council of Canada, she organized a conference on new directions for research and policies on jobs for women and technology.

Fernande Faulkner has as the scientific director for a productivity study being conducted at Laval University. At the Department of Communications, she is responsible for writing the final assessment report on the five pilot projects in the Office Automation Program (begun in 1983).

Quebec Federation of Women (FFQ)* - Denyse Rochon, President:

The FFQ is a federation of some forty Quebec women's associations, with a total of approximately 80,000 members.

A few years ago, the FFQ set up a "technology" committee and

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* Additional documentation may be consulted at CWARC.

participated with other women's associations in a meeting called by Pauline Marois, the Minister responsible for the status of women in Quebec. The purpose of this meeting was to identify the groups' interests with respect to computerization.

Following this, the FFQ and CIAFT (action council on work opportunities for women) were invited to participate in the conferences on computer technology organized by the Quebec Department of Science and Technology. They participated throughout the 2 years of this project (a total of 3 conferences).

The FFQ has a twofold interest in this question. First, the members most of whom hold paying jobs, are generally interested in the impact on the labour market (on clerical and professional workers), and in the development of programs to acquire equipment.

Second, the FFQ is interested in computerizing its administrative functions (secretariat, list of members, and possibly accounting). In 1982, the FFQ submitted to the Quebec Department of Science and Technology, under a financial assistance program for associations wishing to computerize, a project for implementation of a computerized network linking its member associations. Due to changes in both the department and its policies, the program did not go ahead.

The FFQ has participated in a number of commissions since the conferences and has not taken any further action on the question of new technologies. Denyse Rochon was unable to tell us whether the new board, which will be elected shortly, will give priority to this question. However, there is, still considerable interest in the possibility of computerizing (possibly in cooperation with the Montreal Relais-Femmes group) and joining future networks.

HEC* - Jeannine David-McNeil, Dina Lavoie et al.:

In 1984, this group received a grant to carry out a study on the impact of the management of certain office automation technologies on the work of women. This study will be completed in June 1986. It will contain five case studies on establishments in the private and public sector: 1) the banking system; 2) the retail trade; 3) the public service; 4) libraries or the municipal sector (to be determined); 5) the manufacturing sector. The two central questions in this research were: 1) how can the "management" variable be an explanatory variable for impact? and 2) are there impacts?

These studies led to five monographs which it is hoped will eventually yield several key impact variables to be taken up subsequently in a complete scientific study.

Jeannine David-McNeil carried out a preliminary research project in 1984, in which she studied the implementation of office automation at the HEC. Her major conclusion was that secretaries appreciated the new technologies, and the final result was positive. A second project is currently being carried out using the data collected by McNeil, with a view to analyzing the degree of worker satisfaction.

Canadian Research Institute for the Advancement of Women-Institut canadien de recherches sur les femmes (CRIAW/ICREF)-Yolande Mennie, Permanent Staff:

In 1982, CRIAW published the proceedings of a major conference held that year in Ottawa, entitled "The Future is Now", along with a document by Ursula Franklin on the theme: Will women

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* Additional documentation may be consulted at CWARC.

change technology or will technology change women?

CRIAW also maintains a computerized list of Canadian women researchers and in 1983 commissioned a feasibility study on setting up a data bank containing bibliographical information on women (see bibliography), a project which they eventually abandoned.

At present, CRIAW has no project on the spread of computer technology nor any forthcoming publications on this subject.

IRAT (Institute for applied research on work)
- Colette Bernier*

A few years ago, Colette Bernier was actively involved in a summary document published by the INP on the impact of new technologies on work, examining work organization, qualifications and occupational health.

Over the past three years, she has carried out three sectorial analyses on jobs in the service sector, one in a bank, one in a university and one in a public service company. She performed case studies, involving detailed job analyses, to examine the question of qualifications and changes to them, as well as training. Colette Bernier conducted these studies with a French ergonomist, Catherine Cailloux.

These researchers decided to exclude the study of typists' jobs, since they felt that this sector had already been sufficiently covered by other researchers. Instead, they chose to observe the whole area of work on terminals: cashiers, key punch operators (customer accounts or records). Colette Bernier

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* Additional documentation may be consulted at CWARC.

expects to produce a report during the summer of 1986.

Her future projects include a continuation of detailed job studies - ergonomic studies - on a comparative basis, if possible. She would also like to work with a doctoral student on forms of labour management during the period of computerization, that is namely development of part-time work, variation in working hours, etc.

Institut national de productivité - Daniel Lamoureux, Project Manager:

The INP was assigned to act as the secretariat for the agency coordinating studies and analyses on the impact of new computer technologies on employment and the labour force, a mandate given to it by the Quebec micro-electronics conferences.

In this respect, the INP is currently completing an inventory of research and researchers on computerization and work in Quebec. The INP has also published a number of documents on the question, but it has not dealt specifically with the question of women.

Quebec Department of Manpower and Income Security (MMSR) - Monique Frappier-Desrochers, Director, Research*:

Together with the Centre de recherche et des statistiques sur le marché du travail (Centre for labour market research and statistics), the MMSR carried out research last year on the impact of word-processors on employment and work (see bibliography). This year, the Centre is working alone on the second

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* Additional documentation may be consulted at CWARC.

phase of this project, while the MMSR has contracted INRS-Urbanisation to research the impact of new production technologies on the Quebec economy. This study, which will be published in May 1986, will deal with 62 sectors of the economy. The MMSR also requested an examination of the impacts on various occupations, including the number of women and variations in this number.

Quebec Department of Higher Education, Science and Technology- Lise Lacroix*:

Since she began working for the Education Department a year ago, Lise Lacroix has been responsible for developing an action framework to promote access to computer culture for the general public (individuals and groups). The first phase of this project consists in meeting with various groups and clients to identify their resources, the equipment they have, current activities in this field and social use patterns that have developed in various regions of Quebec.

A status report should be ready by the end of June 1986, but the study has already identified four avenues the department might target in its action program: 1) pooling of resources and cooperative action on the regional level; 2) development of data banks for the general public; 3) promotion of recreational computer activities, provided they are useful to groups; 4) action directed to various socioeconomic groups to promote decentralization of computer services in their favour.

Concrete action will be taken with respect to this last item by subsidizing three pilot projects over a three-year period with groups developing community applications of computer technology: two in outlying regions and one in Montreal. The Department will then prepare an assessment of these experiments which it will use in directing future action and developing its grant program.

All these projects will include a look at women, but on the same basis as other groups.

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* Additional documentation may be consulted at CWARC.

Regroupement des femmes entrepreneures du Québec (Quebec association for businesswomen) - Ginette Lefebvre, President:

We communicated in writing with Mrs. Lefebvre to ask for an interview, but received no reply to this request. A new contact will be made if CWARC decides to pursue its examination of the needs and resources of this specific female population.

Regroupement des secrétaires du Québec (Quebec secretaries association) -Nicole Lagüe*:

Since it was founded in 1979, the RSQ has been constantly concerned with the question of technology. The RSQ has participated in a research project, taken positions, and circulated information on the question (for instance, in its newsletter **La frappe**).

When we contacted them, a meeting was to be held shortly to discuss whether the group should be dissolved or at least its activities suspended during a period of reflection. A new contact should eventually be made with this group to see what has become of it.

Relais-Femmes de Montréal - Marie Letellier, Director:

During the 1984-85 conferences, the Quebec Department of Science and Technology commissioned a review of the literature on women and technology. This project was given to Marie-Paule Maurice, a trainee at Relais-Femmes, and was intended to complement existing files on women's groups.

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* Additional documentation may be consulted at CWARC.

This work yielded a voluminous document (see bibliography), and Relais-Femmes is currently studying the various possibilities for distributing this document to women's groups and circulating the information.

Labour Canada

1. Women's Bureau, Jane Caskey and Gwenn Hughes:

Over the past few years, the Women's Bureau has published several summary documents (see bibliography) and maintains updated bibliographies on the theme of micro-technology and women.

The Bureau is carrying out its own research on this subject, in addition to receiving or commissioning work from outside. Research projects received recently concern subjects such as stress, electronic supervision, etc.

The Bureau also held a major conference on the effects of micro-electronics on work in 1981, and in 1982 as part of the working group on micro-electronics and employment.

The women interviewed are currently assessing directions to be taken by research in the months to come. Gwenn Hughes gives priority to large-scale economic analyses so as to examine the relationship between periods of investment in equipment and variations in employment and productivity. She is currently conducting cost and feasibility studies.

Labour Canada

2. Policy and Strategic Analysis Branch - Technology Impact Research Group - Sue Kirby:

Sue Kirby is working on a grant program for two types of activities: (1) Research on the social and human impact of new technologies; (2) so-called "demonstrator" pilot projects which in fact are joint projects between workers and employers with a view to the efficient implementation of new technologies in the work environment.

In all, 32 projects have been subsidized to date (case studies, economic studies, etc.). Other projects will be approved in October and January. Most of the submissions received deal with the first type of activity, and requests for the second type are rare. Sue Kirby would like to see emphasis placed on the latter type as well as on ergonomic and quantitative studies in the future.

Travail Non Traditionnel Inc. (TNT) - Nicole Yergeau, Coordinator:

TNT is not working directly on the question of office automation. It is more concerned with numerical control and CAD/CAM equipment. It is attempting to break into the world of non-traditional occupations and consequently directs its "students" towards jobs as repair technicians rather than to clerical work.

Their basic training program also includes a workshop on the demystification and operation of computers. If they had access to equipment, they would like to further develop one of these demystification workshops.

University of Montreal - Certificate in Office Automation, Jacqueline Bourdeau*:

Jacqueline Bourdeau has participated on various levels in the organization of conferences on women and computer technology.

As a researcher, she worked with Lauraine Gratton to develop a training program for instructors in office automation - the office automation instructor certificate - now given by the Education Faculty at the University of Montreal.

Lauraine Gratton is in charge of this program.

University of Quebec at Montreal - Department of Sociology, Céline Saint-Pierre:

This researcher is concerned with two aspects of the problem of computerization: reflection and research. Céline Saint-Pierre has written a number of works on the subject, edited special journal issues on computerization and worked with union groups to produce general audience/awareness documents.

In addition, over the past few years she has conducted case studies in the banking sector, in addition to making a study based on 1971-1981 census data on the development of jobs and the place of women in the service sector (occupational structures, salaries, qualifications, etc.).

She is preparing to continue her work with a 3-year research program which will concern banks, insurance companies, large offices and small businesses. She plans to examine the training of subordinates and the supervision of work carried out. This

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* Additional documentation may be consulted at CWARC.

work will involve a field study, including quantitative and qualitative analyses.

In addition to these activities, Céline Saint-Pierre is involved in training sessions in unions and with women's groups, where she deals specifically with awareness of the computerization phenomenon from a sociological point of view. She is also involved in organizing conferences. A commission member at the Quebec micro-electronics conferences, she is now a member of the Quebec Council on the Status of Women.

YMCA* Management Centre for Women, Ruth Selwyn:

Since 1980, the Women's Y has offered its clientele micro-computer demystification courses in both languages to groups of 12 women for a period of 6 weeks (12 hours). Basically, the courses are intended to demystify technology for women who are ill at ease with it and to familiarize them with it in a friendly and relaxed setting. To date, the average age of "students" is 35, and 90% of them hold jobs.

For the past four years, the Management Centre for Women has included a great many courses and workshops on computers in its program: "Demystifying Computers", introduction to the basic components of a data processing system, Word Processing, BASIC, LOGO for mothers and daughters, choosing a micro-computer and software, etc. Groups have come from other regions to take these courses, and the Management Centre also organizes regular study sessions and information/awareness sessions on weekends, which attract several hundred women.

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* Additional documentation, including a description of the 12-month training program set up by the Halifax YWCA, may be consulted at CWARC.

The Management Centre has approached micro-computer companies to obtain more equipment and facilities and university community services to obtain help in evaluating courses and teaching material.

The Centre's other projects include a training course for group instructors; distribution of their courses in the various regions of Quebec; and eventually a "computer wagon", modeled on the bookmobile.

PART II - ANALYSIS OF NEEDS AND RECOMMENDATIONS

In this section, we will examine the needs, as they have been identified in our review of the literature, and report on information collected in interviews.

III- NEEDS IDENTIFIED IN THE REVIEW OF LITERATURE

Predicted effects of the move to computerize the work of women include:

- massive unemployment;
- reorganization of work (at the international, regional and sectorial levels);
- a redefinition of duties and positions resulting in;
- decreased job security;
- down-grading;
- loss of control;
- an increase in supervision and the pace of work;
- isolation;
- dangers linked to occupational health and safety;
- and a dual polarization which would lead to certain jobs being enriched while others would be down-graded, thus cutting

off the traditional paths of upward mobility for women.

The main fear with regard to the process now going on is certainly that not only will women be unable to further progress in improving their collective status, but some ground may even be lost.

The computerization process is obviously quite complex, and all the elements mentioned above deserve particular attention. A number of needs for studies or action were thus identified in the documentation consulted and recommendations have been formulated on numerous occasions. These needs concern the following areas.

3.1 Impact on work

First, the question of massive unemployment must be analyzed. At present, neither the number of women holding jobs destined to disappear, nor what new jobs are to be created, is known. As well, little is known about the extent to which computers have penetrated into businesses, nor how wide-spread their use is. As a result, no valid forecast can be made on the future of jobs. This constitutes an important gap in the research.

In the opinion of many, an overall assessment of this field cannot be done by "micro" analyses (at the business or even sectorial level). Instead, we need analyses of the "macro" type, which would serve to measure job movements.

An important variable to be examined is that of occupational and geographic mobility. Information must be obtained on regional transfers due to computerization of head offices, for example, to the detriment of branch offices, or on the concentration of jobs in computerized supermarkets to the detriment of local stores, of the concentration of skilled jobs in banks located in urban areas and routine work in branches, all of which may decrease the opportunities of women in rural areas (Wyatt and Henwood; Terry, 1985). An attempt must also be made to identify those sectors on economic activity where there have been job transfers, in order to work out adjustment strategies.

From an affirmative action standpoint, moreover, sectorial and local analyses are necessary to better understand the mechanisms governing technological change. A nationalized bank in France, for example, maintains an up-to-date quantitative and qualitative census of the number and status of all its female employees. This allows it to rapidly implement mechanisms to correct any deterioration in the status of women (Laufer, 1982).

Case studies should also provide us with information on new work conditions, the design and content of tasks, systems of control and supervision, job protection and participation in decision making. In particular, the division of occupations into routine work and skilled work must be seriously examined.

Certain applied research projects could also target experiments with implementation processes that encourage participation by clerical personnel throughout the preparation, introduction, assessment and adjustment process. Attempts might thus be made to reorganize work with a view to reducing or rearranging work time for all employees, both male and female (Commission 3 Report - 3rd Meeting, Volume 2). It would also be desirable to develop implementation models and prototypes of master agreements that would take into consideration the situation of all workers (male and female, unionized and non-unionized, temporary or permanent, etc.).

Systematic, on-going studies should also deal with all aspects of occupational health and safety, particularly effects on the reproductive system. It is suggested that the entire matter of ergonomics be examined, when arranging working space, with employees in each company, as well as in an experimental environment (effects of radiation). All these questions must be integrated into programs for training specialists in industrial health.

These studies are important in all sectors affected by computerization and not only where offices are being automated. Apart from offices, this would include retail sales (small shops and supermarkets), communications, banks, libraries, educational institutions, hospitals and social service centres, insurance companies, and business service companies.

It is becoming increasingly important to study the question of computerization in small businesses, in terms both of assessing the effects and of promoting computerization (feasibility studies, models for analyzing impacts and human resource planning, retraining formulas, etc.). Several reports also reiterate the need to develop mechanisms to inform, encourage and support small businesses in the computerization process (technical and management training, information sessions, etc.). Concern for affirmative action should also be a priority here, and particular attention should be given to female business leaders (access to specialists, to information, etc.).

In addition, if the threat of lowered job security proves to be real, it becomes urgent to study the segmentation of the labour market. An assessment must be made of the extent to which marginal forms of work have developed (subcontracting, work done at home, freelance work, non-union labour, contract work, etc.), the conditions under which they are performed and the social and legislative mechanisms that must be developed preclude a new form of exploitation and growing marginalization of female labour.

At the same time, the new businesses developing around electronics and software should also receive particular attention: analysis of the integration of women, and development and testing of concrete and original means to promote opportunities for women, both as specialists and as business owners.

We shall conclude this section with an examination of forecasts developed by various parties. In the opinion of many researchers (McDonald in ECC 1984, Wyatt and Henwood; Rothschild), one of the first priorities is to develop a theorical framework powerful enough to take into account both technological change and the specific characteristics of the work of women. This framework should enable us to analyze the mechanisms that perpetuate sexual division of work and inequality in job distribution in this

process; it would also enable us to undertake studies (very few of which have yet been carried out) on the quality and distribution of jobs which result from technological change, and examine how new jobs are distributed in the labour force and develop affirmative action strategies.

In research on work, it also seems important to adopt an analysis model that would examine the overall question of the contribution of women to the economy. This should take into account not only those aspects linked to the job market but also those which characterize other fields of women's activities (family life, parenting, housework, etc.). This research seems indispensable, particularly if we want to better understand the segregation mechanism at work (Jennifer Stodart and Martha McDonald in ECC, pages 124 and 131).

This larger avenue seems all the more important since it parallels an almost total lack of research on the social and cultural consequences of new technologies, even though this need has been identified on numerous occasions.

In closing, we reiterate the need to recognize research/ action as legitimate and eligible for grant and research programs, since this type of approach is the one mainly favoured by women's groups. This is also true for all the applied research fields (work, education, groups, etc.).

TABLE 2

NEEDS FOR RESEARCH AND ACTION: WORK-RELATED ASPECTS

Changes in the nature of work	- Salaries - Duties - Product quantity and quality - Schedules - Choice of technical procedures
Changes in work organization	- Person-group relations - Interpersonal relations - Participation in decision-making and planning - Access to information - Organizational structure and quantity and quality control (degree of responsibility, type of supervision) - Mobility
Structural changes	- Transformation of positions - New forms of work (loss of security, work at home, subscontracting, etc.) - Occupational segregation - Unemployment - Small businesses
Occupational health and safety	- Danger for reproduction - Eye problems, cataracts - Back and head aches - Stress linked to pressure and pace of work - Freedom of physical movement, breaks - Ergonomics and person-machine relations
Quality of working life	- Isolation - Monotony - Feeling of integration vs anomie - Feeling of satisfaction and accomplishment - Feeling of security (job security, possibilities for improvement and promotion) - Feeling of support
Legislative aspects	- OHS and job protection
Prospects	- Prospect assessment and scenarios - Development of implementation models, assessment grids and master agreements

3.2 Training, retraining, information and awareness

Training and retraining is certainly the most frequently expressed need as regards women and computers. Training seems to be a key item in the current process, whether on-the-job retraining, basic general training, vocational guidance for girls, or access to new careers, non-traditional occupations and professional training programs.

This means that it is necessary to implement and assess "pro-active" mechanisms to allow women to integrate sectors where they can take advantage of technological change in a wide variety of occupations.

We must also develop on-the-job training programs that would provide women with vertical mobility from clerical work to more skilled work, especially in the case of older women. The effect of new technologies on the qualifications and initial vocational training of women must be studied.

An attempt must also be made to assess the use of the scientific and technical resources of our schools, on-the-job training and retraining programs and occupational training programs (Are these programs complete? Are they offered at times and in locations and conditions - including child care services - that are accessible to women? Do they give women a way to get out of ghettos? Which women have access to these courses? Is it women from all age groups or only younger women? Is time provided for women to express and discuss their hesitations and difficulties?).

It also means that we must investigate the attitudes of women and girls towards science, technology and mathematics and determine what action is required; that we thoroughly examine

the guidance services our schools offer to girls (are they always directed towards traditional ghettos?) and develop non-sexist and pro-active guidance tools. Research might also be done on the positive effect of innovative measures such as teaching science and mathematics to girls in separate classes or compulsory non-mixed introductory courses to micro-computers (Labour Canada, Series B, No. 1). Action might be taken to combat "mathematics trauma" by making girls more aware of the work of great women mathematicians of the past (Marie-Françoise Roy in "Les Cahiers de la femme"), by creating career games for women or courses in future studies, and by encouraging women teachers to participate in training programs that give them skills in using new technology, in order to create role models.

We must also examine, in order to change them, the attitudes of employers to the work of women, which appears to be considered secondary in importance. In the case of the French nationalized bank mentioned above, for example, the problem of women and equal opportunity is raised systematically in all management seminars (Laufer, 1982).

Information and awareness campaigns are essential. Needs mentioned in this connection are:

1) better promotion of the various training programs;

2) development of large-scale informational activities on the poor future of office jobs and the present consequences of poor career choices by girls;

3) a massive awareness campaign on the professions of the future and on non-traditional occupations. This could involve a campaign directed at the general public on an on-going basis to promote debate; production of audio-visual material and training manuals; development of

courses and animation, awareness and introduction to micro-computers programs for children, teenagers, parents, mother-daughter groups, members of women's groups, female educators and the public in general.

Particular targets would be women who do not have paid jobs or who are working part-time.

Particular emphasis is placed on the support to be offered to innovative activities and training/information/awareness programs such as those being developed within women's groups. A detailed directory of training programs for women in Canada would be useful for this.

A number of people brought up the fact that technical training or computer literacy courses should always be designed to include training on the role of technology in society, its control, production and implications (see Benston in "Les Cahiers de la femme"). In short, these programs require a social and political content which would provide a more thorough understanding of the phenomena involved and should be intended to help women better understand their history (including their role in science and technology), what is at stake for them, and how they can develop their own strategies. In addition, this training should include an explanation of the nature of the changes and transformations in the character of work, the operation of equipment and the health risks.

In the final analysis, we must tackle the "moral questions" raised by new technologies while diminishing women's fear of technology and increasing their self-confidence and the knowledge and skills they can use on the job market.
Tables 3 and 4 summarize the points most commonly mentioned in this respect in the literature surveyed.

TABLE 3

NEEDS FOR RESEARCH AND ACTION: TRAINING-RELATED ASPECTS

- Creation and assessment of programs to introduce girls in both elementary and secondary school, as well as adult women, to micro-computers and make them familiar with their use.

- Design and assessment of initial training programs for professional secretaries.

- Guidance for girls.

- Scientific and technical training for girls.

- Integration programs for non-traditional occupations that will not rapidly become outdated.

- Training of instructors in special programs for girls and in technology.

- Training of training specialists in businesses and social and cultural groups.

- Design of training software designed for women.

- Directory of existing courses.

- Subsidies to groups to enable them to develop their own courses.

- Assessment of training/retraining programs in businesses and creation of programs adapted to affirmative action needs.

TABLE 4

NEEDS FOR RESEARCH AND ACTION: ATTITUDE-RELATED ASPECTS

- Study of attitudes of managers towards women.
- Development of awareness models on women's issues for managers.
- Assessment of the needs and interests of women and girls (e.g. an examination of the question of violence in computer games).
- Working with manufacturers to create programs adapted to women.
- Development of awareness models for groups and the general public, and of programs to understand and participate in the goals and objectives of policies concerning technology.
- Surveying groups in order to determine whether they feel that they have been left behind by new technologies and in what way.
- Development of conferences, courses, and information sessions for women's groups.
- Assessment and support for the development of innovative programs.

3.3 Women's groups: strategies and control

According to Valaskakis (GAMMA, 1981), there are three possible aspects to the study of the computerization of work: the diagnostic aspect, the forecast aspect (probable future) and the strategic aspect (desired future). Many of the recommendations that we have listed may thus be placed in the third category, which concerns strategy. These recommendations are made so as to find the means to give women more control and power (individually and collectively) in the computerization process. Such strategies call for, apart from research effort, a specific desire to promote exchanges and consultation, to support and promote the initiatives of women's groups in their efforts to appropriate new technology. This would entail co-operation between the various individuals and bodies involved and might be accomplished, for example, by making the computer services of universities increasingly available to women in the form of "community services".

The need to document the problem of women and new technology is a recurring theme. Many would be interested in seeing data banks created and updated regularly:

1) micro-data on the process of change (data by industry, occupation, sex and age of the workers involved, machines, etc.), which could be consulted by everyone involved in research and/or action (Marsden in ECC, November 84, page 94);

2) of published documentation on this subject;

3) on the women and groups concerned with this question (directory on women and computers);

4) on available training programs, etc.

Developing such data banks would make it possible to avoid duplication and provide rapid access to information for all groups, thus facilitating the development of national strategies. Setting up such services would also entail the development of means of access for the various groups.

At the same time, the role of volunteer popular education bodies and groups with respect to creating awareness of and spreading scientific knowledge must be recognized. Support should be given to these groups so they can develop their own courses. There is also a need for a program to assist groups in mastering the use of computers. For example, groups may use computers to manage mailing lists, to create data banks, to analyze requests for documentation, information and services and to provide the means to improve reference services and action, as well as contributing to demystifying the tool. This entails:

- consulting services on computerization for groups;

- financial assistance for the purchase of equipment and software;

- assistance to groups in the form of training in the use of computers;

- financial assistance in accessing computer communication networks and data banks;

- assistance for research on social impact. (Commission 4 of the socio-economic conferences on micro-computers)

At the same time, action should taken to encourage the participation of women's groups in the debate on computerization by

helping them understand and take part in the development of policies dealing with technology, so they can define what they want to gain from technology and develop their own projects. In this respect, there appears to be an additional need to organize conferences and information sessions for these groups, and it is proposed that a survey be made among them to determine whether the feel they are not abreast of the latest development and, if so, which ones? (CACSW, pp. 85-86).

Certain groups have even suggested promoting the creation of international women's networks which would enable us to increase our knowledge of international job transfers, eventually develop specialized data banks on certain aspects of computerization, and rapidly exchange information between researchers and groups in different countries.

TABLE 5

NEEDS FOR RESEARCH AND ACTION: ASPECTS RELATED TO ASSOCIATIVE LIFE AND POWER

- Creation of specialized data banks.

- Creation of networks linking women and groups, both nationally and internationally.

- Organization of congresses and conferences.

- Pooling and exchange of information. "Become rich in information."

IV- OPINIONS AND RECOMMENDATIONS OF THE PEOPLE INTERVIEWED

In this section, we will examine the information collected in personal and telephone interviews. These individuals were selected for their experience in 1) the transformation of work, or 2) women's associations. The following subjects were discussed with them: general needs for research, action and support as identified by them in the course of their work; needs related to their own activities; projects they would like to see developed; the role that CWARC could play; and their own interests and input with respect to future cooperation. These informants thus shared with us their impressions regarding the following needs.

4.1 Research

4.1.1 Research on work

Researchers repeated again and again that research on work automation in the service sector deals with the work of women, since it is women who work in computerized jobs. They added, however, that this is not sufficient and that specific examination is needed of the differences in the effects on men and women, as well as issues specific to the work of women (ghettoization, double work days, need to deal "at arms length" with their children, limited professional guidance and very short career projects, necessary affirmative action programs, etc.).

Two research needs appear as priorities for researchers and others involved: first, based on the principle that the

implementation of technology is governed by management policies, there is a need to obtain concrete knowledge through very detailed case studies. It is suggested that field studies lasting several months or even several years be carried out if possible with female employees (or their representatives), emphasizing their point of view (satisfaction, desires, needs and dissatisfaction regarding training, definitions and expectations regarding the quality of work life, reorganization of work, etc.). The central element in this "qualitative" approach is thus listening, and this requires "implementation methods that are flexible, which can be modified along the way and which can also modify the technology" (Fernande Faulkner).

As regards case studies, there is a need for "quantitative" analyses of changes (work variation, redefining of jobs, mobility, etc.), as well as ergonomic studies and job observation to study changes in job description (increase and decrease of mental work load, recognition of qualifications, etc.). This type of ergonomic study presents particular problems since it is a recent phenomenon here. We therefore have very few analysis models and little appropriate methodology. In addition, there are few people with the training and experience necessary to conduct this type of study. This is a problem which research organizations must try to solve, particularly since it is one of the most interesting approaches to the detailed study of qualifications, which is a significant problem for female workers. It would be interesting, in this respect, to see longitudinal studies carried out before, during and after computerization.

In addition, there is a serious lack of global quantitative studies of the "macro" type to properly assess the extent of the phenomenon and identify critical sectors and specific impacts on women. Those who develop training programs and researchers beginning their research require this general data

which should, at the very least, answer the following questions for each economic section of the service sectors: What types of tools are used? To what extent have computers penetrated the organization? Which jobs are affected? What are the new forms of time and work management (part-time, night work, subcontracting, etc.)? What is the relation between the investment in a given sector and variations in jobs and productivity?

It should be noted that this is not a question of just repeating literature reviews, but of collecting and updating original data. There is a need for figures and other data that would show which businesses are thinking of computerizing, which are not considering this, and why. Most see an institution such as CWARC taking responsibility for a project of this size, possibly in cooperation with other bodies such as Statistics Canada or Labour Canada.

As regards research on work, the following areas should be examined: variations in jobs and unemployment, the double polarization of jobs, down-grading, health, the effect of work transformations on older women and their ability to adapt, effects on middle management and particularly on female supervisors (increased stress, new demands, resources allocated to them, etc.), the variety of tasks, electronic supervision, identification of tasks to be improved by technology in order to increase pleasure and creativity, working relationships and feelings, the way in which employees are involved at the decision-making level, policies regarding on-the-job training, etc.

Some of the women involved also indicated that they have the impression that research is carried out in a haphazard manner. They feel that it has become essential to set aside studies that are too wide-ranging and exploratory and concentrate on a

few key variables to be examined in depth, with typically representative scientific sampling.

If CWARC developed a program of research on women, they would like to see it make this focusing those working with it to do the same.

A number of people spoke of sectors or populations to be studied as a priority. It is thought that although researchers have often examined the question of office automation and typing work (word processing), the transformation of filing and data collection work (cashiers, accounting, billing, customer service and recording clerks, accountants, etc.) deserves much more attention.

It is thought that research on offices is adequate compared to research in the commercial sector (wholesale and retail), the finance sector and the manufacturing and industrial sector, which deserve much more attention. Certain population groups are also considered neglected:

> "(...) the periphery, that is, the labour periphery, the geographic periphery and the economic periphery." (Céline Saint-Pierre)

It is thought that in regions such as Montreal or Toronto, there is an abundance of resources and researchers. Conversely, in the more remote regions, or in provinces such as the Maritimes, there is a lack of means and resources. Research directed toward these zones would, among other things, increase our knowledge of the effects of work restructuration and the geographic mobility of enterprises.

Comparative studies could also be carried out between the various regions of Canada: to analyze the differences and similarities between Francophone and Anglophone women with respect to computerization; to study a number of branches of the same company at the same time, etc.

There is also a tendency to study the effect of computerization only on permanent female workers. We now need a better understanding of the overall process regarding population groups such as non-unionized female workers, part-time and temporary workers, those registered with placement agencies, etc. Information is needed on the relationship and status of farm women with respect to the computerization of their family farm, as well as that of women managers and business owners. The whole question of new forms of work at home remains deplorably unexplored.

The more positive aspects should also be considered and even tested: how can these technologies be used, by managers or secretaries, to improve their situation? For example, how can employees use word processing machines to move ahead in their career, or earn promotions? What solutions might be tested to counter the negative effects on women? How can we determine the qualifications for new jobs and inform people of them? In short,

> "(...) to carry our process through to a conclusion, not simply say, that does this, that does that, that makes this worse, that makes that worse. We must ask ourselves what we can do." (Jeannine David-McNeil).

Last to be examined are the difficulties encountered by researchers. First, research on computerization is only beginning to look at the specific question of women. Certain number of "methodological" problems arise: how, for example, can we assess the difference in impact on men and women when they do not hold the same types of positions, what analysis framework could be developed to take into account all the characteristics specific to the work of women? These questions, which are central to any project concerned with women, call for a great deal of thought and may even be worthwhile themes for encounters between women researchers (and other women concerned by this question) and documents to be distributed to researchers.

Second, some women mentioned the problems of gaining entry to businesses to carry out research of a "social" nature. This process is a long one and businesses are often reticent. In addition, many businesses (particularly small ones) do not keep data on work performed in previous years (number of women employed, wage scales, etc.), which hinders research considerably. Assistance from CWARC in this respect would be most welcome.

4.1.2 Other sectors of research and action

Virtually all of our respondents indicated that priority should be given to the exploration of the difference between men and women with respect to technology. It is felt, for example, that some effort should be devoted to studying:

- the attitudes of both young girls and women workers;

- the differences in approach between men and women;

- the attitudes of businesses toward the work of women (by investigating how willing they are to invest in retraining, for example);

- male and/or sexist concepts of technology (software, video games, applications, etc.);

- why high school girls drop scientific and technical courses;

- etc.

These differences should not simply be studied in order to eliminate them, but also to see how attention could be drawn to them and how programs could be developed that would be more stimulating for women.

Our respondents felt that it is essential to go beyond the framework of research to develop models, approaches and programs for women.

> "My point of view, my starting point, is that I think that there are differences between men and women. (...) Today's technology is very masculine. (...) All of the studies I have done have shown that women and men are different where technology is concerned. (...) Why, with these new systems, do we not try to increase the variety of choices and accessibility, and then promote different approaches?" (Fernande Faulkner).

In a somewhat different vein, all sorts of legal questions were mentioned, specifically

> **"the whole democratic aspect, respect for privacy, protection of freedoms, (...) computer crimes and the protection of citizens against them, the spreading of private information (...)" (Lise Lacroix).**

In short, we need to develop expertise in the protection of citizens' rights with respect to computer technology.

Certain respondents also referred to the legal "monitoring" of technology in Canada and as compared to other countries. Sociologists do not consider themselves qualified to take on such projects and suggest that they would require the cooperation of lawyers and legal specialists such as the research group on computers and the law at UQAM or groups such as the Civil Liberties League.

Our respondents also mentioned the need to broaden frameworks and admissibility criteria for research programs and grants to include research/action. In other words, research must be carried out with the cooperation of women in the field and funding made available to them so that they can carry out their own research projects. A similar recommendation was made at the conference organized by the Canada Science Council last spring.

4.1.3 What role can CWARC play in research?

As we have already mentioned in this section, researchers suggest that if CWARC wishes to develop its own projects care must be taken to ensure that all research projects and information studies include an analysis of the effects on women and a section dealing with affirmative action and equal opportunities. In addition, it is suggested that the Center looks at areas that have so far received little attention:

- Additional studies in regions and on population groups designated as "peripheral".

- Longitudinal studies, ergonomic and "qualitative" analyses.

- Updating of overall information by sector, occupation, etc.

- Development of approaches and methodologies for implementation that would take the needs of women into account.

- Examination of sectors such as agriculture and commerce.

CWARC might also play a dynamic role in defining and describing women's problems by promoting meetings, sponsoring research to develop an analysis framework, and preparing material to be distributed. This framework could also serve as a guide for research on attitudes and the assessment of technology.

Finally, CWARC could also act as a liaison between researchers and businesses, to improve relations between these two groups. CWARC might back certain projects, organize campaign directed to business to explain the necessity and advantages of "social" research and even, in this respect, prepare summaries of good

research which has already been completed and draw up standard agreements which might be signed by both parties. In addition, CWARC could contact businesses and ask them to keep data on work (data which is essential to researchers) and invite them to publish their results. It could also actively promote the circulation of information and cooperation between researchers in various regions of Canada. This need for exchanges of information, as well as meetings, was emphasized by several respondents. Researchers know little of what is being done in other regions of Canada and feel that they do not have complete information on their field.

These women do not have the time to organize such meetings themselves, and it is felt that a centre such as CWARC would be the ideal organization to coordinate such activity on a cross-Canada basis. The meetings would prevent duplication of work and allow participants to divide up the various fields of study, identify gaps, pool information and develop joint projects. Most of the women felt that the centre should intervene so that, instead of researchers simply meeting among themselves, women from various backgrounds (research, training, intervention, groups, unions, government, etc.) could meet and exchange views and information in order to draw up a plan of action more rapidly. The centre might also maintain an updated list of ongoing projects.

The need to see information circulate far exceeds this framework. Women would like CWARC to keep trans-border networks alive and active. They complained that little information is available on American groups and researchers, and of the limited access they have to their publications and research data. The same is true with respect to Europeans (particularly the Danish and Norwegians) who certainly have much to teach us about labour legislation and agreements between business and government.

If CWARC wanted to provide this service, it could subscribe to various periodicals as well as to selected data banks (on occupational health, for example), initiate contacts with various groups here and elsewhere, "cover" conferences in the United States, and develop agreements for the exchange of information. It could in fact act as a specialized documentation centre on the question of women and computer technology, where researchers could come to work. It could, in addition, transmit this information, by means of a newsletter, for example. This recommendation is similar to the one already formulated by research and action groups in other countries and proposed in meetings here (SCC, 1985).

A final priority for CWARC, in connection with research, would be to maintain its contacts with women's groups and other women concerned by this matter, and keep the prospects for action-oriented research open.

4.2 Training

When asked about current needs with respect to women and computer technology, most of the women working in this field mentioned training. Basically, they repeated what we have already described in our literature review: if attention is not given to training at all levels (retraining, on-the-job training and ongoing training, elementary and secondary education, access to equal opportunity, access to non-traditional occupations and to professional training), technology will bypass women.

According to Danielle Hébert of the CNTU, action is needed at two levels:

1) setting up training and orientation programs, and

2) assessing what is already being done at various levels.

Requests for training/information sessions seem to be increasingly numerous, in the workplace and as well as in groups and the population in general. Organizers have come to the following conclusion: no one is trained once and for all since changes continue to occur. Some organizers feel that they need larger training budgets, whereas grants from various government departments are mainly awarded for research (Danielle Hébert, Ruth Selwyn, Susan McCrae Van der Voet and Mona Forest). These budgets would make it possible to offer training sessions to more participants, to better publicize and "market" them, to improve the content and make it more specific, to adapt and make these courses available to various populations in different sectors, to evaluate courses and teaching material, etc.

Most of our respondents criticized the training and awareness programs currently being offered by educational institutions and governments. They complained about

- the lack of emphasis on women's problems;

- the lack of analysis of human and social impacts;

- the fact that mixed courses perpetuate lack of self-confidence among women;

- inaccessibility;

- waiting lists several years long for professional training.

Basically, they feel that these programs do not represent valid alternatives for women.

There were suggestions that it would be more effective to seek out women where they are usually found and where they feel at ease, and to make use of the expertise already developed in certain groups and to encourage projects that are well installed in these areas, thus integrating both the technical aspect and an understanding of the implications.

As a result, there is a great need for training of trainers who would take these programs out to the regions. There is also need for a good program to train women in office automation. It was even suggested that a specialized school be opened within a women's organization (Ruth Selwyn). It was also suggested that material dealing specifically with computer literacy for women be translated, that consumer guides on the various courses available be prepared, and that information and specialized training kits for women be produced. In remote regions (Northwest Territories, Yukon, etc.), new technologies might be used to respond to women's educational needs (Susan McCrae Van der Voet).

4.3 Working together: Women's groups

The first observation that comes out of the meetings we had is that, while certain women's groups have identified their needs and the projects they would like to undertake precisely, many others have not yet come to grips with the problem of new technologies. Lack of interest? Lack of information? Other more pressing issues? We will not venture to determine the causes of this lack but will confine ourselves to stating that this is an important area for analysis.

Given the importance of this question in the lives of women, it is the opinion of several of our respondents (Louise Fortin, Ruth Selwyn, Céline Saint-Pierre, Denyse Rochon) that this is a problem to which CWARC might give priority. We must not only adopt a position of analysis, but approach the question "pro-actively", by looking for ways to convince women to use machines, promoting a climate of questioning, exchange and action in a wide variety of groups (women at home, farm women, women in outlying regions, etc.) and offering active and continuing support to promote the participation of women in parliamentary committees, to assist them in becoming members of the boards of directors of research centres or to participate in regional socioeconomic summit meetings, in short, to enable them to exercise power and "vigilance" (Louise Fortin).

There are a number of suggestions as to how to do this: setting up files of available information on the question showing why it is important for groups; cooperating in courses, information sessions, study sessions and conferences; circulating information between groups and researchers; preparing information and teaching material: slide presentations, intervention tools, brochures, etc.; contributing to the purchase of equipment.

The last point is one which we would like to discuss further here. All grant programs, whether federal or provincial, exclude the purchase of equipment, except in the case of certain business assistance programs. There are many reasons in favour of a change in attitude. First, women's groups are not eligible for these programs since they are non-profit organizations; nevertheless, many of these groups and centres create jobs just as many small businesses do.

Next, it must be recognized that one of the best ways of learning more about a given piece of equipment is to integrate

it into an everyday environment. Providing groups with such equipment will increase knowledge and decrease apprehension, particularly in population groups that are otherwise unfamiliar with technology (women at home, older women, etc.).

Finally, many non-profit groups have already clearly identified their needs in this respect in innovative projects (creation of data banks and networks, organization of courses, etc.) but will never have the means to equip themselves, thus perpetuating the barrier between women and technology. If equipment were provided to certain key groups, however, this would set an example and inspire other groups.

A number of projects (or ideas for future projects) were put forward by respondents (some of these will be submitted to CWARC in the near future).

The Montreal Women's Centre, for example, has developed a course for the disadvantaged female clientele it is already serving. In addition, the Centre has already analyzed its needs in terms of the computerization of its information bank and management (see details on page 16). The Centre now needs assistance to buy equipment and start up and evaluate activities, as well as institutional backing for their pilot project in order to make contact with manufacturers. The same need for equipment was expressed by the **TNT** group (non-traditional work), which also offers its clientele (women coming back to the work force) workshops on operating micro-computers.

Relais-Femmes de Montréal has done a considerable amount of research on the question of women. It would now like to produce a series of brochures to be distributed to women's groups. Together with the **FFQ** (Quebec Federation of Women), Relais-Femmes wishes to maximize the use of the computer material they already have.

They need specialists, new software (to keep, among other things, an up-to-date list of members), and eventually to computerize their documentation centre and explore the possibility joining networks of women's groups.

At the **YWCA**, the **Management Centre for Women** has for several years been giving courses to familiarize women with microcomputers. The need now is for more equipment for hands-on workshops. With a larger budget, the Y could vary its clientele (offer courses to younger women, mother-daughter groups, etc.).

In addition, Ruth Selwyn proposes to organize meetings for women's groups with an American specialist in computer literacy for women. She would also like to develop with this specialist a training program for trainers in the regions, in cooperation with various women's groups (the FFQ for example), in order to make their course on demystifying the computer broadly known.

Ruth Selwyn also provided us with a text describing a training program set up and given this year by the Halifax YWCA for women seeking employment. The evaluation is very positive, and this program might be used in developing similar programs in other regions, in particular to set up a similar school in Montreal, a project which the Management Centre would be ready to sponsor.

The question of awareness, education and distribution is also one of the main concerns of CCLOW (see page 17). CCLOW already have concrete projects to develop teaching tools especially designed for women. The members of CCLOW are all women specializing in education and come from all the regions of Canada, and CCLOW does feel that they have all the necessary qualifications to lead or cooperate in such projects. They are also very interested in working on training in women's groups and on projects for remote education for women.

More general ideas to be developed were also formulated, such as joining networks:

> **"what would be interesting, would really be a network of women's groups. Not just for Quebec but throughout Canada, so that we could go and get information when we want to, rather than each of us accumulating our own information. (...) we could set up computer links with the CSF, CACSW, and then with the universities with respect to feminist research..." (Denyse Rochon).**

Thought might also be given to a pilot project organized on the basis of a number of regional terminals to which the 1,500 women's groups in Quebec could have free access. This proposal to promote a regional organization fits in well with the conclusions of a study carried out for ICEA (adult education institute) last year among popular groups in Quebec.*

This network could be linked to a **data bank** containing information that could be used to prepare documents or presentations. The existing document banks are, for the most part, American and mainly specialize in economic matters. Thus, there is little access to Canadian (bilingual) data about women. A data bank might also centralize information collected (and duplicated) in all the documentation, information and reference centres for women. Considerable interest was also shown, both by researchers and by groups, for **banks of resource persons** which could be referred to when organizing conferences or regional training sessions or when seeking associates for research projects, for example.

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* See Dumas, Lizotte et Tremblay, Pratiques et besoins d'information. Enquête sur l'opportunité d'un réseau populaire d'information. UQAM et ICEA. August 1985).

To do all this, **feasibility and need studies** are required which, according to our respondents, could best be done by a Canada-wide institute, such as CWARC. **Assessments of computerization requirements**, including evaluations of the effects on employment in groups, carried out by researchers specializing in community issues, might also be undertaken, at least in part, by CWARC. This research might also be useful to other groups who wish to computerize.

4.4 Information

The entire question of the circulation and distribution of information was systematically identified. This need has already been mentioned with respect to the work of researchers and other women involved. At this time, we should also mention the interest they all expressed in making information available to a wider audience: advertising and information campaigns for the general public, aimed at interesting all women, particularly those who are isolated or hard to contact. In this way, we could be sure that the tools necessary to define the problems and reflect on them reach those who have the greatest need for them (Céline Saint-Pierre).

There is also a need for a "positive" awareness campaign, aimed at counteracting the circulation of negative information and the creation of an alarmist climate (Jeannine David-McNeil). An attempt should also be made to circulate the positive results of certain studies and emphasize the advantages women find in new technology and the means to accentuate them. The goal is to encourage women to be pro-technology rather than just "put up with the revolution".

These campaigns could be undertaken by traditional means (publications, media, conferences, cable TV broadcasts, half-day information sessions in women's groups, etc.).

Innovative approaches might also be developed to make technology available to the general public: using the model of certain awareness workshops in France and Sweden, for example, agents in regions might work together to promote the establishment of local community workshops (Lise Lacroix, Louise Fortin). "Mobile clinics" might also be organized in cooperation with school boards, for example (Louise Fortin, Ruth Selwyn), to make equipment that is normally under-utilized in schools available to women's groups and centres.

Finally, the circulation of information should also be extended to include another social "agent", the government. It is hoped that the results of all these activities dealing with women's issues could be transmitted to the various government departments and other public and parapublic bodies. In other words, CWARC should play an advisory role (similar to that of the Quebec Status of Women Council), in order that "this reflection produces some reaction on the part of the various departments involved and that this in turn influences the entire decision-making process" (Céline Saint-Pierre).

4.5 Possibilities for cooperation

Most of the respondents were enthusiastic about this project and expressed interest in receiving a copy of the report and learning of any action that might result from it. In addition, they were interested in cooperating with CWARC. Researchers are, for instance, prepared to make research results available, exchange information and participate in committees on specific themes in order to establish priorities and avoid duplication.

Certain researchers would like to see joint projects developed. With more resources, they could complete their research projects, make progress on the various questions and arrive at conclusive results more rapidly. Research would no longer be partial (Jeannine David-McNeil and Dina Lavoie).

The need to coordinate activities between institutions and even to conclude interdepartmental, intergovernmental or interministerial agreements was also expressed, both at the Quebec level (CNTU, CSF, MEST) and the Ottawa level (Labour Canada, Department of Communications).

For the projects proposed (see section IV.3), the groups encountered are already in a position to make tangible contributions: cooperation established with the universities; expertise of members; volunteer workers; contacts with equipment suppliers, etc. In addition, the Consult-action service of the Quebec Status of Women Council (CSF) has organizers in all regions of Quebec who maintain contact with the various women's groups. This is an institutional network which could be called upon to distribute or collect information.

It is obvious that much work remains to be done: defining jurisdictions, clarifying mandates, stating precise demands and

concluding agreements, since the respondents could not formally commit their organizations. But all this could be accomplished in the near future.

CONCLUSION

The above review of the question of women and technology is very broad. This presentation was voluntarily adopted in the hope of providing material for reflection at several levels and for various participants. Insofar as CWARC wishes to seriously examine the possibility of intervening with respect to the specific question of women and computer technology, however, we must draw some general conclusions and present more specific recommendations.

The unmistakable enthusiasm that the present undertaking aroused in the women we met and the desire they expressed to learn what resulting action might be taken by CWARC led to our first recommendation:

> **that the Centre distribute this report to all persons interviewed and that the report be used to produce a working document that may serve as an instrument for reflection in the groups and institutions concerned with this question. CWARC should also study the possibility of follow-up action with the individuals already interviewed.**

From our reading and interviews we learned that the problem of women and computer technologies may be approached in two main fashions:

1) By systematically integrating the specific question of the effect of new technologies on women into more general works on the subject. As we saw in the first section of this document, since the early 1980's, research on the effect of new technologies and the number of researchers and institutions specializing in this area are both on the increase.

We are nevertheless obliged to recognize that we are facing a dilemma: on the one hand, prospective literature systematically concludes that women's jobs will be particularly hard hit by new technologies and that it is urgent to tackle this aspect of the problem and attempt to minimize the negative effects. On the other hand, there is a proliferation of empirical research which only rarely seems to concern itself with the specific effect on women, except as a marginal or secondary phenomenon.

We feel that it is important to draw attention to this gap, which calls for the integration of various fields of analysis (combining analyses of productivity and social and organizational effects, for example). As a result, we recommend:

> **that the Centre exercise leadership in this field by making sure that the question of women is dealt with specifically in its research on the impact of new technologies and on organizations, as well as in any implementation models developed. CWARC might also invite those who work with it to reflect on these questions.**

As we mentioned in chapter IV, research on the specific question of effects on women means, among other things, that adequate analysis models still have to be developed to deal with the problem of women and work as well as that of computerization.

Given its status as a specialized Canadian centre, CWARC could perform this role on the national level. It could also encourage and guide researchers in this respect, particularly by promoting and nourishing this reflection, contributing to the preparation and distribution of documents on the question, organizing meetings and seminars, promoting the exchange and circulation of information between researchers in various areas, developing implementation models that take this twofold problem into account, etc.

2) **Along with this broader action, it appears relevant to conclude from our reading and interviews that there is a need for a specific program on the question of women and computer technology in Canada.**

Since women's needs in this respect are very great and involve several sectors, such a project would have to go beyond the strict research framework and could also be designed to include various other activities: information, training, creation of tools (software and written and audiovisual documents), and cooperation. Given the Centre's vocation, these activities would be carried out in cooperation with outside bodies (universities, businesses, groups). A number of respondents felt that CWARC would be an ideal organization to provide this type of leadership on a Canada-wide scale. Therefore, we recommend:

> **that the Centre study ways and means to implement a program of research and specific action on the question of women and computer technology.**

Such a project might conceivably (but not exclusively) include:

- cooperation with other research bodies in order to collect and keep up-to-date general data, from the standpoint of issues pertaining to women, on variations in employment and occupations, investment sectors, etc.

- cooperation with researchers on case studies in crucial areas (peripheral regions, insecure jobs) or in relatively unexplored areas (libraries, municipal administrations, retail businesses, social and health services).

- creation of specialized data banks on women that would be accessible to groups and researchers (bibliography banks, lists of resource persons, inventory of current projects, work statistics, etc.). The Centre could also serve as a documentation centre to which women would have access (periodical subscriptions, "coverage" of conferences in other countries, etc.).

- cooperation with women's groups specializing in the field of training and action to develop teaching programs and material that could be distributed on a large scale, to all the major groups. Cooperation with groups could also take the form of pilot projects for testing computerization of administrative tasks and information activities in non-profit groups and measurement of the effects of this action.

- implementation of an overall communications plan, which could eventually include a network linking researchers, groups and other concerned individuals in Canada and placing them in contact with networks and concerned individuals outside our boarders.

As we learned in this project, several women's groups have not yet come to grips with the overall problem of new technologies and are lacking the information they need begin to deal with this issue. It is thus important to support them by providing information on the implications for women. In addition, since the women who have been confronted with technological change are often isolated and hard to contact, a communications plan should also include diffusing to a larger audience the information that is already circulating between the individuals concerned by this issue (information campaigns, production of brochures, organization of seminars in regional women's groups, a "computer wagon", etc.). This question of circulation of information was high on the list of the needs identified by respondents.

In brief, we feel that there is a need to seriously examine the possibility of setting up a versatile program specializing in women's issues within the Canadian Workplace Automation Research Centre. This is implicit in the comments of many of our respondents, who were in favour of this type of coordination of the various efforts and a reference and resource centre.

As we observed during this study, resources already exist, and there are real possibilities for cooperation. If CWARC wants to pursue this, the next step would be to establish concrete projects with groups that have expressed interest in cooperation (see chapter IV).

At the same time, steps should be taken to collect data on projects and resources in other regions of Canada and to study new possibilities for cooperation and exchange. We are thinking particularly here of the Maritimes, Toronto and Vancouver, where this preliminary work has turned up important resource pools that might be called upon and mobilized.

All in all, we feel, having completed this preliminary study, that we can fairly state that there are real resources, capabilities and possibilities for cooperation on the question of women throughout Canada. We also believe that there is a place for a program that would provide leadership and work closely with these various resources.

If CWARC were willing to take on such a role, it appears likely that this initiative would make it possible to tackle the major problem facing Canadian women, that of computerization, dynamically, creatively and pro-actively.

APPENDIX

Interview Format

INTERVIEW FORMAT

1. Identification

- Name of respondent
- Organization
- Relation to the problem of women and computer technology
- Previous activity in this field. In what connection and with whom?

2. Current and future projects

- Type (research, documentation, action, etc.)
- If research - (methodology, field of application, schedule, etc.)
- Goals and objectives (how does this fit into the approach and general framework of the organization, what use will be made of it)
- Resources involved ($, persons, etc.)
- Outside assistance
- Schedules

- Of the various options available, why was this project chosen?

- If there are no current projects, why not?

3. Needs assessment

- Assessment of previous and current activities (needs to which they respond, needs to be satisfied, difficulties encountered, etc.)

- In general, their perception of the field of computer technology and of women, and the concrete needs and priorities in this respect (need for knowledge, tools, action, models, etc.)

- Specifically, what are their particular needs with respect to their action (research, tools, cooperation, etc.)

  . immediately
  . for longer term projects

- If they had all the necessary resources, what would receive priority and for what reasons? (Case studies, production of documents, research/action, areas such as work, associative life, education, etc.)

4. Attitudes and positions regarding cooperation with CWARC

- Description of CWARC's capabilities

- What programs do they think it would be useful for CWARC to develop?

- Common interests identified by them in CWARC's work

Forms of cooperation

- Role they would like to see CWARC play in future joint projects and nature of these projects

- Role their organization would be ready to play (their investments, what they can offer CWARC)

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